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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,062	07/24/2000	Shoicho Hirota	81940.0001	6479

26021 7590 05/20/2003

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/624,062

Applicant(s)

HIROTA ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Response to Arguments***

2. Applicant's arguments filed on 03/04/2003 have been fully considered but they are not persuasive. The original rejections as stated in Office action dated September 12, 2002 are still valid.
3. The abstract, as amended, has been approved.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (Suzuki) (U.S. Patent No. 6,433,845) in view of Itoh et al (Itoh) (U.S. Patent No. 5,485,295).

a. As to claims 1, 6 and 13: Suzuki discloses a reflection-type color liquid crystal display apparatus comprising an active matrix substrate (12) provided with a plurality of pixels each having a switching element and a reflection electrode (53) in a matrix shape, a glass substrate (11) having a transparent electrode (51), a liquid crystal layer (20) arranged between the active matrix substrate and the glass substrate, a phase plate (25) and a polarizing plate (15). Suzuki also discloses that the phase plate (25) converts linearly polarized light into circularly polarized light over a wide wavelength band (Col 7, lines 49-52). Although Suzuki discloses all the elements of a reflection type LCD, Suzuki does not explicitly go into the details of the projections of the Stokes parameters for the light polarized by the polarizer. However, Itoh in disclosing a similar liquid crystal display device, discloses the projections of Stokes parameters (S1, S2, S3) of the light between the phase plate and the liquid crystal layer on the S1-S2 plane constitute a substantially linear line over a wide wavelength band (Fig. 18a). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the projections of the Stokes parameters disclosed by Itoh to the liquid crystal display device disclosed by Suzuki to enhance the viewing performance by enhancing the contrast ratio of the device.

b. As to claims 2-4, 7-9 and 14-16: Suzuki discloses in his invention and also in the discussion of the prior art several combinations of retardation values for the liquid crystal having various states such as white and dark display modes, the twist angles, angles made by a transmission axis of the polarizing plate and a liquid crystal orientation direction on a side of the glass substrate, azimuth angles of the phase plate and retardation of the phase plate falls in a range of 100-700nm, 60-95 degrees, 15-135 degrees, -15 to -75 degrees respectively. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the above parameters (which are related to the contrast ratio Col 4, lines 47-66) as disclosed by Suzuki and the prior art disclosures to enhance the viewing performance by enhancing the contrast ratio and the brightness of the images.

6. Claims 5, 10 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki and Itoh as applied to claim 1, 6, 11 and 17 above, and further in view of Vagyu (U.S. Patent No. 6,133,894).

Although Suzuki (Col 11, lines 30-33) discloses a color filter substrate with color layers of red, green and blue (primary colors), Suzuki does not disclose the use of a light source for irradiating the LCD with three primary colors and time switching on a time division basis. However, Vagyu in (Col 6, lines 31-53) discloses a light source for illuminating a liquid crystal display containing three primary colors and a method of switching between the three primary colors to obtain images. Therefore, it would have been obvious to one having ordinary skill

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in the art at the time the invention was made to adapt the light source disclosed by Vagyu to the liquid crystal display device disclosed by Suzuki to provide high-resolution images.

7. Following is the response by the Examiner to the applicant's arguments:

(a) Applicant's argument No. 1 (page 4, lines 1-3): The applicant submits that the cited teaching of Suzuki is unrelated to the above claim limitations. Nor is the polarization of the light at the reflecting plane described anywhere else in that (Suzuki) reference.

Examiner's reply to argument No. 1: While describing the reflection type liquid crystal display in the second embodiment (col. 12, lines 26-37), Suzuki does refer to the reflection of the incident light by the reflector electrode (307). The incident light is circularly polarized by the polarization plate (311) and the quarter wavelength plate (310) and enters the liquid crystal layer (304). Since the reference characters for the optical elements in the second embodiment is similar to the first embodiment, the above teachings by Suzuki will also apply to the first embodiment. Hence Suzuki does teach the polarization of the light at the reflecting plane.

(b) Applicant's argument No. 2 (page 4, lines 6-7): Itoh's does not relate to a reflection type LCD. Hence the references Suzuki and Itoh cannot be combined.

Examiner's reply to argument No. 2: Itoh does teach that his invention can be applied to any of transparent type, semi-transparent type, **reflection type** and projection type monochromatic or colored liquid crystal display apparatus (Col.26, line

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67 and col. 27, lines 1-3). Thus the Suzuki and Itoh references can be combined using the motivation given earlier.

(c) Applicant's argument No. 3 (page 4, lines 11-13): Vagyu only describes a driving method and does not relate to reflective type LCD, it does not cure the defect of Suzuki and Itoh.

Examiner's reply to argument No. 3: Fig. 5 of Vagyu discloses a system that includes a light reflection means (1A) and the light reflection means may comprise a liquid crystal device. Vagyu continues in describing the reflective-mode liquid crystal device further (col. 5, lines 30-45). Thus Vagyu's teachings can be combined with those of Suzuki and Itoh.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

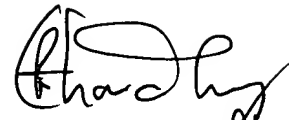
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May 14, 2003

  
T. Chowdhury  
Primary Examiner